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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/556,232	10/12/2006	Tim Haulick	11336-1204 (P03088US)	3703

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EXAMINER
PAUL, DISLER

ART UNIT	PAPER NUMBER
2615	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/556,232	HAULICK ET AL.	
	Examiner	Art Unit	
	DISLER PAUL	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5 and 16-21* is/are rejected.

7)☒ Claim(s) *4,6-15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/27/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed 3/28/08, with respect to the rejection(s) of claim(s) 1 under Yang et al in regard to the " determining temporal and spatial information based on each microphone array and processed output singals" have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of June et al. (US 2003/0185410 A1).

Claim Objections

2. Claims 8-15 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim can not depend on a multiple dependent claim (e.g., claim 5 is a multiple dependent claim). See MPEP § 608.01(n). Accordingly, the claims 10-15 not been further treated on the merits.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1,5 are rejected under 35 U.S.C. 102(e) as being anticipated by June et al. (US 2003/0185410 A1).

Re claim 1, June et al. Disclose of the Method for enhancing communication in a noisy environment comprising: receiving input signals emanating from at least two microphone arrays each comprising at least two microphones (fig.3 wt (201,202); par[0029]) and processing the input signals of each microphone array by a beamformer to determine temporal and spatial information about the input signals of each microphone array(fig.3 (304);par[0037,0039,0040,0042,0032]/the only one microphone array (201) determined location of person in XY dimension as well as the temporal time info and as fig.3 (202) to help estimate the three dimensions of speaker and for efficiency each microphone array with fig.3 (308) may be used (par[0072]; fig.7).

Re claim 5, the method according to one of the preceding claims, further comprising detecting speech activity for each microphone array (par[0042]).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over June et al. (US 2003/0185410 A1) and further in view Yang et al. (US 7,206,418 B2).

Re claim 2, the method according to claim 1 with processing each array of input signal with beamformer, however, June et al. wherein processing the input signals of each microphone array comprises processing by a wanted signal beamformer to obtain a wanted signal and by a blocking beamformer to obtain a blocking signal, preferably wherein the wanted signal beamformer is an adaptive beamformer, But, Yang et al. disclose of a system wherein the processing the input signals of each microphone array comprises processing by a wanted signal beamformer to obtain a wanted signal and by a blocking beamformer to obtain a blocking signal, preferably wherein the wanted signal beamformer is an adaptive beamformer (fig.2 wt (212); fig.3; col.5 line 1-37) for purpose of suppressing noise signal included in the speech signal array. Thus ,taking the combined teaching of June et al. and Yang et al. as a whole, it would have been obvious for one of the ordinary skill in the art at the time of the invention to have modify June et al. with the processing the input signals of each microphone array comprises processing by a wanted signal beamformer to obtain a wanted signal and by a blocking beamformer to obtain a blocking signal, preferably wherein the wanted signal beamformer is an

adaptive beamformer for purpose of suppressing noise signal included in the speech signal array.

Re claim 3, the method according to claim 2, wherein processing the input signals of each microphone array further comprises deciding whether a signal is transmitted from a wanted signal direction, wherein the wanted signal beamformer is an adaptive beamformer being adapted only if no signal is transmitted from the wanted signal direction (Yang, col.11 line 36-41/signal may be adapted during time of *non speech activity; col.10 line 44-51; fig.5 with col.8 line 5-20*).

4. Claims 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over June et al. (US 2003/0185410 A1) and Roddy (US 6,363,156).

Re claim 16, June et al. disclose of the Communication system comprising: at least two microphone arrays each comprising at least two microphones to produce microphone signals, at least one analog/digital converter having an input for receiving said microphone signals and an output for providing digital microphone signals (fig.3 wt (310); par[0037])), digital signal processing means having an input for receiving the digital microphone signals, being configured to process the digital microphone signals of each microphone array by a

beamformer to determine temporal and spatial information about the microphone signals of each microphone array, and having an output to provide processed output signals determined location of person in XY dimension as well as the temporal time info and as fig.3 (202) to help estimate the three dimensions of source) and having an output to provide processed output signals (fig.3 wt (320); par[0038]).

However, June et al. fail to disclose of the specific wherein the processed output signals to at least two loudspeakers. But, Roddy disclose of a spatial enhancement audio with microphone input signal system wherein the processed output signals to at least two loudspeakers (fig.1-2 wt (30,34); col.2 line 35-65) for the purpose of enabling the passenger in a vehicle to hear the speech of the drivers or others in the vehicle. Thus, taking the combined teaching of June et al. and Roddy as a whole, it would have been obvious for one of the ordinary skill in the art at the time of the invention to have modify June et al. with the processed output signals to at least two loudspeakers for the purpose of enabling the passenger in a vehicle to hear the speech of the drivers or others in the vehicle.

Re claim 17, the Communication system according to claim 16, wherein the digital signal processing means is further configured to

detect speech activity for each microphone array (par[0038]/for array (301) detect speech activity with (fig.3 (304) and par[0042])).

Re claim 18, the Communication system according to claim 17 with speech detecting means (parp0040-0041]), However, the combined teaching of June et al. and Roddy as a whole, fail to disclose of wherein the digital signal processing means is further configured to determine and apply an attenuation to the processed digital microphone signals of a microphone array if no speech activity is detected for the microphone array. However, official notice is taken the concept of applying an attenuation to the processed digital microphone signals of a microphone array if no speech activity is detected for a microphone is commonly known in the art, thus it would have been obvious for one of the ordinary skill in the art to have modify the combined teaching of June et al. and Roddy as a whole, with the concept of applying an attenuation to the processed digital microphone signals of a microphone array if no speech activity is detected for a microphone for enhancing the produce sound signals for other detecting speech signals.

Re claim 19, the communication system according to claim 17, wherein the digital signal processing means is further configured to select at least one loudspeakers out of the at least two loudspeakers on which

the processed signals are to be output (col.3 line 1-5 & line 14-16/signals from microphones to appropriate/selected speakers).

Re claim 20, a vehicle cabin comprising a communication system according to claim 16, and at least two loudspeakers, wherein each microphone array and each loudspeaker is associated with a passenger seat (Roddy, fig.1, col.2 line 40-50).

Re claim 21, has been analyzed and rejected with respect to claim 16.

Allowable Subject Matter

3. Claims 4,6-7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Disler Paul whose telephone number is 571-270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. P./
Examiner, Art Unit 2615

/Vivian Chin/

Supervisory Patent Examiner, Art Unit 2615